

the consultant had been and asked me to give my opinion which I cheerfully did. I advised him to speedily remove the concrete in question and to do whatever else the consultant engineer demanded which I believe was right.

In conclusion let me say that whatever may be your difficulty with your board of public works, thrash it out once and for all and arrive at a definite understanding. A governing and impelling hand is a necessity and I believe the board of public works is as adaptable to the purpose as any city body.

PUBLIC WORKS CONTRACTING AS A BUSINESS

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Construction is one of the oldest, and the second largest industry in the world. It is surpassed only by agriculture in the number of persons employed and the volume of expenditures per year. Its relation, therefore, to commercial or business affairs is decidedly important. Construction is essentially a business, and of its many branches there is none more important than that which we are to consider in this assignment—"Public Works." A fitting definition for public works, in the sense that we are using it, would be, "Any structure, or project, for the construction of which public moneys are appropriated and expended." Accepting this definition as applicable, we at once see that public works embraces highways, streets, bridges, sewers, public buildings and the like. With the view of throwing some light on this business of public works the following phases of it will be treated hereinafter in the order named: Ordinances and statutes; forms of contract; indefinite and restrictive clauses in specifications; incompetent supervision and unrestrained competition.

Ordinances and Statutes

When and wherever public moneys are used, or for whatever purpose they may be appropriated, the need for laws to govern such expenditures at once manifests itself. This need arises always from the necessity of safeguarding the public from whom, through taxation, the money is derived. Consequently, ordinances and statutes governing public works contracts have become multitudinous and range from the smallest unit of local government to the largest unit of federal government. The legal aspect of public works contracting has become as important as the prosecution of the contract itself, and by

reason of almost biennial enactment of new laws or amendments to existing laws, the legal complications of public works contracting are ever increasingly burdensome.

Contract Forms

The form of contract governing public works has a very direct bearing upon this class of contracting as a profitable business. Superfluous verbiage and unnecessary clauses are only confusing and lead to misunderstanding, while inequities and ambiguities, which are to be found not infrequently in some forms of contract are obviously hazardous and costly. A simple definition of contract and one to which exception could hardly be taken is, "An agreement enforceable at law, made between two or more persons, by which rights are acquired by one or more to acts or forbearances on the part of the other, or others." Such a contract can best be arrived at through simplicity, definiteness and fairness, and all verbiage incorporated beyond establishment of this principle usually becomes burdensome, and if properly considered by the constructor would reflect itself in his estimate of cost.

Specifications

Restrictive clauses in specifications are always unattractive and contain a hazard for the constructor which may be costly to him and to the owner as well. The responsible constructor desires and endeavors to build into his work a high standard of quality, satisfactory to the owner and his representative, the engineer. Quality work is creditable as well as profitable to the constructor. The relationship between the owner and the constructor should be one of mutual responsibility and of close co-operation, by which the interests of both can best be served. The absence of such relationship is conducive to differences of opinion, misunderstandings and, often, expensive law suits. Then, too, the existence of any one or all of these conditions creates a suspicion of the constructor in the mind of the engineer and results in the writing of specifications so full of onesided clauses, restrictive beyond reason, that the constructor is encouraged to gamble, if he bids at all. Under such circumstances, if he bids and bids intelligently, he will add a substantial amount for contingencies which he fears may arise in carrying out a contract in which the engineer has restricted unto himself arbitrary authority, and has decided in advance questions concerning responsibility which very often arise through the design of the structure or the written provisions for its construction.

Supervision

That competent supervision, or inspection, is essential to the prompt and profitable prosecution of public works is quite gen-

erally recognized. Incompetency in this capacity entails endless delay and frequently leads to avoidable misunderstandings. Almost invariably the constructor is at the mercy of the owner and often tolerates incompetency in the matter of inspection rather than take the risk of further delay and greater complications. An ironclad and workable provision that the inspection shall be competent, meeting certain qualifications of experience and training, would be an invaluable adjunct to the prompt prosecution of public works.

Unrestrained Competition

Another phase of this business of public works contracting of equal, if not greater, importance is that of the unrestrained competition which exists today in all classes of public works. The absence of qualifications designed to meet a fixed degree of competency and responsibility on the part of the constructor, so as to insure the faithful performance of contract, has brought about a condition in competitive bidding which places a premium on incompetency and irresponsibility. The political sub-division looks always to the corporate surety bond as the guaranty of the faithful performance of contract, regardless of the constructor's experience, equipment or finance. The term "lowest and best bidder" has played havoc with the stability of the industry as a whole. Interests far removed from the field of actual construction, and yet sufficiently identified to be familiar with the major problems of the constructor, have voiced their opinion in the strongest of terms concerning the instability created by this unrestrained competition. Trade journals have recognized the situation and commented adversely in their editorial columns concerning a continuance of the practice. The following taken from one of the trade journals, "Municipal Engineering," October, 1917, as editorial comment, will suffice to illustrate the attitude of the industry and the interests related thereto toward this condition:

"The low bid is one of our cherished institutions. It is lovely in theory. In practice it is as a monkey wrench hurled into the machinery of construction. Everything would be lovely if it were not for the fact that a fool is born every minute and that an amazing number of them horn into the contracting business. Knowing nothing whatsoever about costs, they keep bidding until they are decidedly low on some job. Owing to the prevailing willingness of city officials to sting the contractor on occasion, the ridiculously low bidder is awarded the job. Lacking experience and an organization he is soon head over heels in a dozen kinds of grief. He throws up the job or stays on and goes broke. This makes for poor construction, delays completion, increases costs and balls things up generally.

Meanwhile the responsible bidders are looking for other jobs, occasionally winning out, of course, at a fair price, but being often thwarted by the irresponsible low bidder. There is generally at least one such bidder at every letting.

"Isn't it about time for engineers to come to the rescue of contractors in this connection? For humane reasons why not save the irresponsible bidder from his ignorance and folly? He is a good man, as often as not, but is out of his element. With credit at the bank and an inclination towards contracting, and a desire to win the supposedly large profits in the business, he takes a flier in the construction business and speedily goes broke. Let engineers warn their employers against the irresponsible bidder. Let engineers explain that it never pays to underpay a contractor. The owner invariably suffers when an attempt is made to gouge the contractor, especially a contractor who is incompetent, inexperienced and not any too strong financially."

This editorial is not of recent date. It goes back nearly ten years and is quoted principally, because of its comparatively early appearance. Many others of more recent, even current dates could be cited, but this better serves our purpose because it shows the protracted life of this fallacy which even today much effort is being expended to combat.

The contractor, through organization, has given much thought to correction of these conditions wherever they exist, with the view of making "Public Works Contracting as a Business" less complicated, less hazardous and more profitable. His efforts in the matter tend toward the codification of laws relating to public works and the repeal of such laws as are obsolete, the adoption of standardized contract forms by the political sub-divisions, the elimination of indefinite and restrictive clauses from specifications and standardizing as nearly as practicable the general clauses, establishment of certain qualifications with reference to experience and training for inspection, and the incorporation in contract forms or specifications, or both, such safeguards, with reference to accurately determining the responsibility (of bidder and builder) as are provided for in the standard questionnaires and financial statement for bidders as approved and recommended by "The Joint Conference on Construction Practices."

The correction of these conditions would make "Public Works Contracting as a Business" more attractive and more profitable and the benefits to be derived from such improved conditions would be mutually beneficial. The owner, whether it be an individual, the state or a political sub-division, would benefit, as would the constructor.